REMARKS

Claims 1 to 42 are pending in the application, of which claims 1, 8, 15, 22, 25, 28, 31, 34, 37 and 40 are the independent claims. Claims 22, 25, 28, 31, 34, 37 and 40 and their dependent claims have been added by this amendment. Favorable reconsideration and further examination are respectfully requested.

Initially, Applicants thank the Examiner for the indication that claims 6, 7, 13, 14, 20 and 21 contain allowable subject matter and would be in condition for allowance if rewritten in independent form to include all of the limitations of their base claims and any intervening claims. Rather than rewriting these claims, Applicants present new independent claims drawn along the lines of unamended claims 6, 7, 13, 14, 20 and 21, which include all of the limitations of their unamended base claims and intervening claims.

These newly-presented claims are identical to claims 6, 7, 13, 14, 20 and 21, with some minor editing changes made. The claims map as follows: new claim 22 corresponds to old claim 6; new claim 25 corresponds to old claim 7; new claim 28 corresponds to old claim 13; new claim 31 corresponds to old claim 14; new claim 34 corresponds to old claim 20; and new claim 37 corresponds to old claim 21. These claims and their dependent claims, namely claims 22 to 39, are believed to be in condition for allowance.

Next, Applicants address the objection to claims 1, 4, 7, 8, 11, 12, 15 and 18. The amendments to the claims render this objection moot, since there are no longer first and second predetermined amounts of data in those claims. However, the objections have been taken into account in the newly-presented claims, with the requested changes made. Accordingly, withdrawal of the objection is respectfully requested.

Claims 1, 4, 8, 11, 15 and 18 were rejected under 35 U.S.C. §102(b) over U.S. Patent No. 6,317,811 (Deshpande); claims 1 to 3, 8 to 10, and 15 to 17 were rejected under §102(b) over U.S. Patent No. 5,600,817 (Macon, Jr.); and claims 5, 12 and 19 were rejected under §103 over a combination of Deshpande and Macon, Jr. As shown above, Applicants have amended the claims to clarify the invention. Reconsideration and withdrawal of the rejections are respectfully requested.

Amended independent claim 1 defines a method which includes reading prefetch data in response to a request for prefetch data, receiving a request for demand data, and satisfying the request for demand data with prefetch data prior to completing reading all of the prefetch data. The applied art is not understood to disclose or to suggest these features of the invention, particularly satisfying the request for demand data with prefetch data prior to completing reading all of the prefetch data.

Macon, Jr. describes a prefetching system for retrieving non-consecutive data blocks from a storage medium during a prefetching operation. The Macon, Jr. system determines if data blocks to be prefetched are consecutive. If so, a single prefetch request is issued for the data. If not, multiple prefetch requests are issued. In operation, the Macon, Jr. system first determines if data is present in a cache and, if so, provides that data to a requestor. This is what the cited portions of Macon, Jr., namely column 5, lines 46 to 50 and column 6, lines 37 to 46, describe. However, Macon, Jr. does not disclose or suggest satisfying a demand request before a prefetch request is completed.

Deshpande describes a system which prefetches data from multiple streams. As noted in the Office Action, the Deshpande system determines if a prefetch address collides

with an address in one of the streams. If there is no collision, the system saves the prefetch address, thereby alleviating the need for repeated prefetching requests. However, as was the case above, Deshpande also not disclose or suggest satisfying a demand request before a prefetch request is completed.

Thus, with specific reference to the language of claim 1, Macon, Jr. and Deshpande, whether taken alone or in combination, are not understood to disclose or to suggest at least satisfying a request for demand data with prefetch data prior to completing reading all of the prefetch data. Accordingly, claim 1 is believed to be allowable.

Amended independent claim 8 is an article of manufacture claim that roughly corresponds to claim 1; amended independent claim 15 is an apparatus claim that roughly corresponds to claim 1; and new independent claim 40 is an apparatus claim that roughly corresponds to claim 1. These claims are also believed to be in condition for allowance for at least the reasons set forth below.

In view of the foregoing amendments and remarks, the entire application is believed to be in condition for allowance, and such action is respectfully requested at the Examiner's earliest convenience.

Applicants' undersigned attorney can be reached at the address shown below. Telephone calls regarding this application should be directed to the undersigned at 617-521-7896.

Respectfully submitted,

Date: June 14, 2002

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VERSION WITH MARKINGS TO SHOW CHANGS MADE

--1. (Amended) A method comprising:

reading prefetch data in response to a request for prefetch [a predetermined amount of] data; [and]

receiving a request for demand data; and

[determining an amount of data that has been read prior to completing reading the predetermined amount of data]

satisfying the request for demand data with prefetch data prior to completing reading all of the prefetch data.

2. (Amended) The method of claim 1, further comprising determining an amount of prefetch data that has been read prior to completing reading all of the prefetch data;

wherein determining comprises keeping track of the prefetch data as the prefetch data is read.

3. (Amended) The method of claim 1, further comprising determining an amount of prefetch data that has been read prior to completing reading all of the prefetch data;

wherein determining comprises maintaining a count of prefetch data that has been read.

4. (Amended) The method of claim 1, wherein [the predetermined amount of data

comprises prefetch data and demand data,] the demand data comprises [comprising] data for a computer program and the prefetch data comprises [comprising] data adjacent to the demand data.

5. (Amended) The method of claim 1, wherein the [4, further comprising satisfying a] request for [the] demand data is satisfied without substantial delay using [based on] the [amount of] prefetch data [that has been read prior to completing reading the predetermined amount of data].

6. (Amended) The method of claim 1 [5], wherein, if the amount of prefetch data that has been read is not sufficient to satisfy the request for [the] demand data, the method further comprises waiting for an amount of prefetch data to be read that is sufficient to satisfy the request for [the] demand data.

7. (Amended) The method of claim 1, further comprising:

receiving [issuing] a second request for prefetch [a second predetermined amount of] data, the prefetch data associated with the second request [second predetermined amount of data] being out of sequence relative to the [predetermined amount of data] prefetch data associated with the first request for prefetch data; and

storing an amount of prefetch data that has been read in response to the first request up to a point at which the second request is received [issued].

8. (Amended) An article comprising a machine-readable [computer-readable] storage medium which stores executable [computer-executable] instructions that cause a machine [computer] to:

read prefetch data in response to a request for prefetch [a predetermined amount of] data; [and]

receive a request for demand data; and

[determine an amount of data that has been read prior to completing reading the predetermined amount of data]

satisfy the request for demand data with prefetch data prior to completing reading all of the prefetch data.

9. (Amended) The article of claim 8, further comprising instructions to determine an amount of prefetch data that has been read prior to completing reading all of the prefetch data;

wherein determining comprises keeping track of the prefetch data as the prefetch data is read.

10. (Amended) The article of claim 8, further comprising instructions to determine an amount of prefetch data that has been read prior to completing reading all of the prefetch data;

wherein determining comprises maintaining a count of prefetch data that has been read.

11. (Amended) The article of claim 8, wherein [the predetermined amount of data comprises prefetch data and demand data,] the demand data comprises [comprising] data for a computer program and the prefetch data comprises [comprising] data adjacent to the demand data.

12. (Amended) The article of claim 8, wherein the [11, further comprising instructions that cause the computer to satisfy a] request for [the] demand data is satisfied without substantial delay using [based on] the [amount of] prefetch data [that has been read prior to completing reading the predetermined amount of data].

13. (Amended) The article of claim 8 [12], wherein, if the amount of prefetch data that has been read is not sufficient to satisfy the request for [the] demand data, the instructions cause the machine to wait [method further comprises waiting] for an amount of prefetch data to be read that is sufficient to satisfy the request for [the] demand data.

14. (Amended) The article of claim 8, further comprising instructions that cause the machine [computer] to:

receive [issue] a second request for prefetch [a second predetermined amount of] data, the prefetch data associated with the second request [second predetermined amount of data] being out of sequence relative to the [predetermined amount of data] prefetch data associated with the first request for prefetch data; and

store an amount of prefetch data that has been read in response to the first request up to a point at which the second request is received [issued].

15. (Amended) An apparatus comprising:

a memory which stores [computer-]executable instructions; and

a processor which executes the instructions to [(i)]:

read prefetch data in response to a request for prefetch [a predetermined amount of] data;[, and]

receive a request for demand data; and

[(ii) determine an amount of data that has been read prior to completing reading the predetermined amount of data]

satisfy the request for demand data with prefetch data prior to completing reading all of the prefetch data.

16. (Amended) The apparatus of claim 15, wherein the processor executes instructions to determine an amount of prefetch data that has been read prior to completing reading all of the prefetch data; and

wherein determining comprises keeping track of the prefetch data as the prefetch data is read.

17. (Amended) The apparatus of claim 15, wherein the processor executes instructions to determine an amount of prefetch data that has been read prior to completing

reading all of the prefetch data; and

wherein determining comprises maintaining a count of prefetch data that has been read.

18. (Amended) The apparatus of claim 15, wherein [the predetermined amount of data comprises prefetch data and demand data,] the demand data comprises [comprising] data for a computer program and the prefetch data comprises [comprising] data adjacent to the demand data.

19. (Amended) The apparatus of claim 15 [18], wherein the [processor executes instructions to satisfy a] request for [the] demand data is satisfied without substantial delay using [based on] the [amount of] prefetch data [that has been read prior to completing reading the predetermined amount of data].

20. (Amended) The apparatus of claim 15 [19], wherein, if the amount of prefetch data that has been read is not sufficient to satisfy the request for [the] demand data, the processor executes instructions to [method further comprises waiting] for an amount of prefetch data to be read that is sufficient to satisfy the request for [the] demand data.

21. (Amended) The apparatus of claim 15, wherein the processor executes instructions to [(i)]:

receive [issue] a second request for prefetch [a second predetermined amount of]

data, the prefetch data associated with the second request [second predetermined amount of data] being out of sequence relative to the [predetermined amount of data] prefetch data associated with the first request for prefetch data;[,] and

[(ii)] store an amount of prefetch data that has been read in response to the first request up to a point at which the second request is received [issued].- -